of the so-called Cape *Cominellæ, elongata*, Dunk., and *tigrina*, Kien. It has further the characteristic that the interior cusp of the lateral is serrated all along the inner edge.

Group 4.—Rhachidian tooth tricuspid on a rather narrow base, base strongly arched below, and more or less prolonged into wings; laterals bicuspid, simple, outer cusp the longer and narrower. To this type belong the Magellanic species *antarctica*, Smith, *fuscata*, Brug., *fuscata*, Brug., var. *curta*, Prest., and *innocens*, Smith. There is strong reason to suspect that Preston's var. *curta* of *fuscata*, Brug.,[1] is a distinct species from *fuscata*; the three rhachidian cusps are differently shaped, and set at a different angle.[2] It appears from von Martens' description[3] of the radula of his *E. chlorotica* that that species also belongs to this group, and here too must be classified the West American *E. dira*, Reeve, which possesses a tricuspid rhachidian, set on a base which is rounded above, and deeply arched below, sides produced into wings; laterals bicuspid,[4] simple.

A comparison of the radulæ of Group 4 with those of the *Cominellæ* of New Zealand (*antea*, p. 228) will suggest the conclusion that the Magellanic Euthrias are in fact Cominellas, and should be classified as such. It is noticeable that, in the Falklands at least, "Euthria" occurs on muddy shores, and Mr. Iredale tells me that in New Zealand and on Norfolk Island *Cominella* is always found associated with mud.

EXPLANATION OF FIGURES.

1. *Euthria cornea*, L.: Naples.
2. ,, *linea*, Mart.: New Zealand.
3. ,, *ferrea*, Reeve: Japan.
4. ,, *littorinoides*, Reeve: Auckland Island, New Zealand.
5. ,, *vittata*, Quoy: New Zealand.
6. ,, *clarkei*, T.-Woods: South Australia.
7. ,, *queketti*, Smith: South Africa.
8. ,, *antarctica*, Smith: Cape Horn.
9. ,, *fuscata*, Brug.: Chile.
10. ,, *fuscata*, Brug., var. *curta*, Prest.: Falkland Islands.
11. ,, *dira*, Reeve: Vancouver.

THE GENERIC POSITION OF THE GENUS *NORTHIA*, GRAY.

By the Rev. A. H. Cooke, Sc.D., F.Z.S.

Read 13th April, 1917.

The genus *Northia* was constituted by Gray (Proc. Zool. Soc. Lond., 1847, p. 140) for his *Nassa northiæ*. In his "List of the Genera of

[1] Ann. Mag. Nat. Hist., ser. VIII, vol. xi, 1913, p. 218 (not figured).

[2] There can be no doubt of the identification, as Gwatkin had his specimens from Preston.

[3] "Mittelplatte der Radula mit 3 Zähnen, wovon der mittlere länger, Seitenplatte mit zwei starken einwärts gekrümmten Zähnen, wovon der äussere länger, aber schmäler": Sitzungsb. Naturf. Fr. Berlin, 1878, p. 22.

[4] One specimen shows the remarkable variation of a normal bicuspid lateral on one side, while the inner tooth of the lateral on the other side is in every case deeply cloven, making the tooth tricuspid.

Recent Mollusca, their Synonyms and Types" (*l.c.*, pp. 129–219), he placed *Northia* (misspelt *Northea* in the index) in the *Nassina*, next after *Desmoulea*.

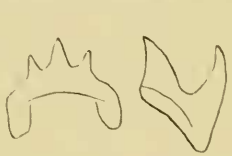
Nassa northiæ is figured in Griffith & Pidgeon's edition of Cuvier's "Animal Kingdom", vol. xii, 1834, pl. xxx, f. 2. Gray's name does not appear, and the species therefore properly belongs to the authors of the book. There is no description in the text. The specimen figured is manifestly immature, and is probably the shell in Gray's own collection in the Natural History Museum, on the tablet of which is written, in Gray's own hand, "Northia?"

Kiener (Iconog., livr. vi, Dec. 1834, p. 23, pl. ix, f. 28) figures the species as *Buccinum serratum* of Dufresne, which is in all probability a manuscript name.

Deshayes (in his edition of Lamarck's Anim. sans Vert., vol. x, 1844, p. 192, No. 69) alters the name to *Buccinum pristis*, *serratu* being preoccupied by Brocchi (*Subapp. Foss.*, 1814, pl. v, f. 4) for a fossil *Nassa*.

H. & A. Adams (Genera, vol. i, 1853, p. 111, pl. xii, f. 1) place *Northia* in the subfam. Nassinæ between the genera *Cominella* and *Truncaria*.

Chenu (Manuel, 1859, p. 159, f. 172) places *Northia* as a sub-genus of *Buccinum*, with *Cominella* and *Amphissa*.



Tryon (Manual, vol. iv, 1882, p. 5) places *Northia* first among the genera of Nassidæ, immediately before *Truncaria*, adding, however (p. 8), that he thinks he would have placed it in the Terebridæ had it not been already assigned to the Nassidæ, or to any other family.

P. Fischer (*Man. de Conch.*, 1884, p. 636) places *Northia* in the Nassidæ, as a sub-genus of *Dorsanum* (= *Pseudostrombus*), which comes between *Canidia* and *Buccinanops* (= *Bullia*).

Dall (Proc. U.S. Nat. Mus., vol. xxxvii, 1909, p. 215) places the genus *Northia* in the family Alectrionidæ, as the Nassidæ must now be called, between *Alectrion* and *Buccinanops*.

Thus the general consent of authorities places *Northia* in or near the Alectrionidæ, a position which the shape of the shell, with its handsomely toothed outer lip, might appear to warrant. But an examination of the radula gives reason for modifying the current view.

As will be seen by an examination of the accompanying figure, the laterals are bicuspid and simple, while the base of the rhachidian tooth is narrow and arched, with the side produced below into wings. Both these points are characteristic of *Alectrion*, and of other genera as well, but here the resemblance ceases, while the

significant feature of an *Alectrion* radula, the numerous small denticles of the rhachidian, smaller at the sides than in the middle, is absent altogether.

In its place we find on the rhachidian tooth three large strong denticles, the central denticle rather the largest, base narrow, sides squarish, strongly winged. The laterals are bicuspid, simple, exterior cusp longer and thinner than the interior cusp, which is strong and remarkably broad.

This combination of a bicuspid lateral, having the inner cusp the broader and stouter, with a tricuspid rhachidian, having cusps nearly equal in size, set on a narrow base with sides prolonged into wings, is characteristic of a section of the genus *Phos*, to which *Northia* stands undoubtedly in very close relationship. Compare the figures of the radulæ of *Phos senticosum*, Lam., and *Phos cancellatum*, Quoy, given in Troschel, *Das Gebiss der Schnecken*, vol. ii, pl. viii, f. 1, 2. A very sharp subdivision of the species hitherto united under *Phos* is indicated by an examination of the rhachidian tooth, for, besides *senticosum*, Lam., and *cancellatum*, Quoy, *roseatum*, Hinds, and *varians*, Sowb., possess the tricuspid rhachidian (and so also does *tasmanicum*,[1] Ten.-Woods), while *gaudens*, Hinds, *nodicostatum*, A. Ad., and *pallidum*, Hinds, have a rhachidian with more numerous denticles, of an *Alectrion* type.

So far as the radula is concerned, *Northia* and *Phos* stand in somewhat close relationship to the *Cominellæ* of New Zealand and Australia, and, to a less degree, to certain Australo-Neozealanian species of *Euthria*. All these four genera are much more closely related to *Buccinum* than they are to *Alectrion*, and should be grouped accordingly.

The shape of the operculum of *Northia* confirms the view that the genus is related to the Photidæ and not to the Alectrionidæ. As given in the figure of H. & A. Adams' "Genera", pl. xii, 1*a*, 1*b*, it is rather thick, long, and narrow, narrowing towards the nucleus, which is terminal and slightly hooked. That of *Phos* is similar, though not quite so thick, with a sub-terminal nucleus. Adams' figure of *Northia* is not quite correct; specimens do not show a marked notch close to the terminal nucleus.

It should be noted that the two other species (*albopunctata*, Ad. & Reeve, and *rissoides*, Reeve) classified as *Northia* by the Adams and by Tryon, have no claim to that position. Still less is *Pleurotoma* (*Daphnella*) *boholensis*, Reeve, a *Northia*, as suggested by Couturier (Journ. de Conch., tom. iv, 1907, p. 130).

[1] J. C. Verco, Trans. Roy. Soc. S. Austr., vol. xx, 1896, p. 228, pl. viii, f. 6.